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Young Wan Kim

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EXAMINER

BALI, VIKKRAM

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/909,406

Applicant(s)

KIM, YOUNG WAN

Examiner

Vikkram Bali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 14-27, 30 and 32-37 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 13, 28, 29 and 31 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-4, 9, 12, 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5351304) in view of Hsu et al (US 5995642).

With respect to claim 1, Yamamoto discloses a fingerprint recognition system that enhancing a scanned fingerprint, restoring the enhanced image, binarizing the image and thinning the image, (see figure 1, 1-1, 1-2, 1-3, 1-4) as claimed. However, he fails to disclose the detecting the core point, detecting the minutiae, and extracting the numerical value by computing the relation between the minutiae and the core point, as claimed. Hsu in fingerprint classification and verification system teaches the detecting the core point, detecting the minutiae, and extracting the numerical value by computing the relation between the minutiae and the core point, (see col. 1, lines 60 through col. 2 line 3), as claimed. The two references are combinable because they are solving similar problem of fingerprint verification by generating a pattern data, therefore, the references are analogous. Therefore, it would have been obvious to one ordinary

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skilled in the art at the time of invention can take the teachings of Hsu calculation of the numerical value by the relation between the core point and the minutiae and incorporated into the Yamamoto's system. This modification provides a system that makes the method able to distinguish between the fingerprints, (see col. 1, lines 52-53 of Hsu).

With respect to claims 3 and 4 it is well known in the art to correct the distortions in the image and to apply inverse filtering or the least square filtering, in order to improve the edge of the image. Therefore, it would have been obvious to one ordinary skilled in the art at the time of invention to simply include the conventional methods of edge enhancement such as correct the distortions in the image and to apply inverse filtering or the least square filtering in to the Yamamoto and Has system in order to get the batter edge to get the better yield.

With respect to claim 9, Hsu further teaches the determining a core area and detecting a core point, (see col. 1, lines 60-67) as claimed.

With respect to claim 12, it is well known in the art that in order to locate the minutiae one has to find the bifurcations in the fingerprint pattern. Therefore, it would have been obvious to one ordinary skilled in the art at the time of invention to find/detect/locate a bifurcation in the fingerprint pattern in order to get to the minutiae, as it is conventionally done.

With respect to claim 14, Hsu further teaches, the ordering the detected minutiae, computing a distance, and assembling the numerical values, (see col. 4 and 5, for the details on the figure 5 numerical 503-510) as claimed.

With respect to claims 15-18, it is well known in the art to have fingerprints being use for the online shopping where the fingerprint data is transmitted through internet as secure cordless/wireless data where the fingerprint data is encrypted in order to make the data secure. Therefore, it would have been obvious to one ordinary skilled in the art at the time of invention to simply include the known knowledge of the art to have fingerprints encrypted in order to have them [fingerprint secure] for the purpose of online shopping where the fingerprint data is transmitted through internet as secure cordless/wireless data, as this is conventionally done.

3. Claims 2, 5-6, and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5351304) in view of Hsu et al (US 5995642) as applied to claim 1 above, and further in view of Ferris et al (US 5631972).

With respect to claim 2, Yamamoto and Hsu disclose the invention substantially as disclose and as describe above in claim 1. However, they fail to disclose the enhancing the contrast, filtering the noise, smoothing the image, as claimed. Ferris in fingerprint

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matching teaches enhancing the contrast, filtering the noise, sharpening and smoothing the image, (see figure 1, image processor and col. 6, lines 29-33) as claimed.

It would have been obvious to one ordinary skilled in the art at the time of invention to combine the references as they are analogous because they are solving the similar problem of fingerprint matching. The preprocessing of the image as taught by Ferris will can be included in to the Yamamoto and Hsu system in order to come up with a robust fingerprint system (see col. 3, lines 60-68 of Ferris).

With respect to claims 5, 6 and 8, Ferris further teaches the binarizing into black and white using the threshold and thinning comprises reducing the width of the black line, (see col. 6, lines 34-41) as claimed.

4. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5351304) in view of Hsu et al (US 5995642) as applied to claim 1 above, and further in view of Kanzaki et al (US 6137531).

With respect to claim 7, Yamamoto and Hsu disclose the invention substantially as disclose and as describe above in claim 1. Further more, Hsu teaches partitioning the image into smaller areas, (see figure 9, and col. 3, lines 32-33) as claimed. However, they fail to disclose, binarizing the image using the intensity levels of the image, as claimed. Kanzaki teaches binarizing the image using the intensity levels of the image, (see col. 14, lines 53-57) as claimed.

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It would have been obvious to one ordinary skilled in the art at the time of invention to combine the teaching of the references because the primary reference of Yamamoto suggested to use any suitable form of binarization method (see col. 2, lines 1-3 of Yamamoto). Furthermore, the teachings of the Kanzaki of binarization of the image by using the intensities is conventional.

Claims 19-27, 30, 32-36 are rejected for the same reasons as set forth in the rejections for claims 1-9, 12, 14-18, because claims 19-27, 30, 32-36 are claiming similar subject matter as claims 1-9, 12, 14-18.

Claim 37 is rejected for the same reasons as set forth in the rejections for claims 1, because claim 37 is claiming similar subject matter as claims 1.

Allowable Subject Matter

5. Claims 10-11, 13, 28-29 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6038666 HSU et al.

Remote fingerprint verification system for that uses encrypted fingerprint, secure communication system over the wireless medium.

US 6175596 KOBAYASHI et al.

Picture signal encoding where the distortion is corrected and filter using the least square method.

US 6631207 HIROTA et al.

Image processor to improve the character edge by distortion correction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 703.305.4510. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703.308.6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Vikram Ban
Primary Examiner
Art Unit 2623

vb
July 16, 2004